

THE

GYMNASIUM

DIRECTOR'S

POCKET BOOK.

1908.

NARRAGANSETT MACHINE CO.

PROVIDENCE, R. I.

**ENGINEERS,
MACHINISTS,
GYMNASIUM
OUTFITTERS,**

CATALOGS.

GYMNASIUM APPARATUS—F7

9 X 12 IN. 86 PAGES.

LOCKERS—C4

BOWLING ALLEYS—E.

7 X 6 IN. 30 PAGES.

PLAYGROUND APPARATUS—H2.

7 X 9 IN. 32 PAGES.

ANY OF THE ABOVE WILL BE SENT



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Edgar F. Cyriac

GYMNASIUM

Director's Pocket Book

CONTAINING

Information of Daily Use to
Physical Directors and
All interested in
Gymnastics.

COOP

1908

COMPILED BY W. L. COOP.

PUBLISHED BY THE
NARRAGANSETT MACHINE CO.
PROVIDENCE, R. I., U. S. A.

❁ 1908 ❁

JANUARY							JULY						
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❁ 1909 ❁

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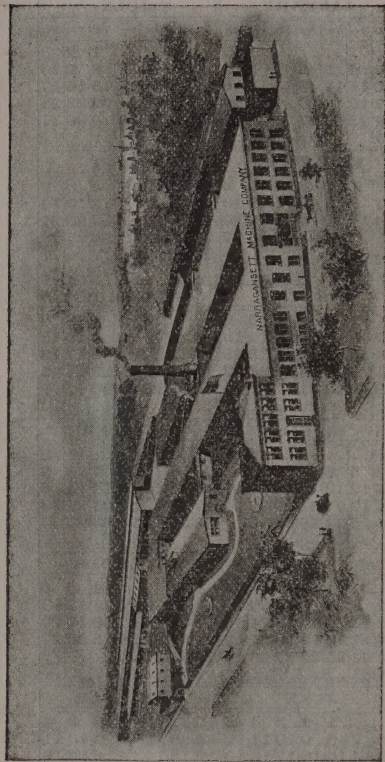
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BELMONT SPECIALTY CO., EVERETT, MASS.



FACTORY OF THE NARRAGANSETT MACHINE CO.

RATES OF POSTAGE

For the United States, Cuba, Porto Rico, Guam, Canada and Mexico.

First class (letters, etc.)	per oz.	2c.
Second class (newspapers)	 4 oz.	1c.
Third class (books, circulars)	 2 oz.	1c.
Fourth class (merchandise)	 1 oz.	1c.
Registration fee (extra)		8c.
Special delivery (extra)		10c.
Postal cards (reply cards 2c)		1c.

FIRST CLASS.—Letters and all other written matter, sealed or unsealed, and all other matter sealed or fastened in any manner not easily examined, 2 cents for each ounce or fraction thereof in U. S., Canada, Mexico, Cuba, Tutuila, Porto Rico, Guam, Hawaii, and the Philippines. (Postal cards and private mailing cards, 1 cent each.)

SECOND CLASS.—Newspapers and periodicals (regular publications) can be mailed by the public at the rate of 1 cent for each 4 ounces or fraction. Publishers and news agents only 1 cent per pound.

THIRD CLASS.—Printed matter, books, circulars, photographs in unsealed wrappers only, 1 cent for each 2 ounces or fraction, fully prepaid. Limit of weight 4 lbs., except for a single book, which may weigh more.

FOURTH CLASS.—All mailable matter not included in the above, which is so prepared for mailing as to be easily withdrawn from the wrapper and examined, 1 cent per ounce or fraction. Limit of weight, 4 lbs.

REFORWARDING.—Letters forwarded upon the written request of the person addressed without additional charge; other mail matter not returned or forwarded until stamps are furnished to pay postage.

MONEY ORDERS.—For orders not exceeding \$2.50, three cents; \$2.50 to \$5, five cents; \$5 to \$10, eight cents; \$10 to \$20, ten cents; \$20 to \$30, twelve cents; \$30 to \$40, fifteen cents; \$40 to \$50, eighteen cents; \$50 to \$60, twenty cents; \$60 to \$75, twenty-five cents; \$75 to \$100, thirty cents.

FOREIGN POSTAGE.—All civilized countries are included in the Postal Union. Letters, per half ounce, 5 cents; second and third class matter, 2 ounces, 1 cent; postal cards, 2 cents each.

WEIGHTS AND MEASURES.

Drachms.

16=	1 oz.=437.5 grains Troy.
256=	16= 1 lb.= 1.2153 lb. Troy.
6,400=	400= 25 = 1 quarter.
25,600=	1,600= 100 = 4 = 1 cwt.
512,000=	32,000= 2,000 = 80 = 20 = 1 ton.

Grains.

Apothecaries Weight.

20=	1 scruple.
60=	3 = 1 drachm.
480=	24 = 8 = 1 ounce.
5,760=	288 = 96 = 12 = 1 pound.

Grains.

Troy Weight.

24=	1 dwt.
480=	20 = 1 oz.
5,760=	240 = 12 = 1 lb.

Inches.

Long Measure.

12=	1 foot.
36=	3 = 1 yard.
72=	6 = 2 = 1 fathom.
198=	16.5= 5.5 = 2.75 = 1 perch or rod.
7,920=	660 = 220 = 110 = 40 = 1 furlong.
63,360=	5,280 = 1,760 = 880 = 320 = 8 = 1 mile.

Inches.

Square Measure.

144=	1 foot.
1,296=	9 = 1 yard.
39,204=	272.25= 30.25 = 1 perch.
1,568,160=	10,890 = 1,210 = 40 = 1 rood.
6,272,640=	43,560 = 4,840 = 160 = 4 = 1 acre.

Cu. inches.

Cubic Measure.

1,728=	1 cu. foot.
46,656=	27 = 1 cu. yard.

Dry Measure.

Pints=33.6 cu. inches.

2	= 1 quart=67.2 cu. in.
8	= 4 = 1 gallon=268.8 cu. in.
16	= 8 = 2 = 1 peck=537.6 cu. in.
64	= 32 = 8 = 4 = 1 bushel.
1 bushel	= 2,150.42 cu. in.

Gills.

Liquid Measure.

4=	1 pint=28.87 cu. in.
8=	2 = 1 quart=57.75 cu. in.
32=	8 = 4 = 1 gallon.
1 gallon	= 231 cu. in.=8.339 lbs. Avoir. of water.

Metric Units.

Linear Measure.

1 centimeter	= 0.3937 in.	1 in.	= 2.54 centimeters.
1 decimeter	= 3.937 in.	} 1 foot=3.048 decimeters.	
0.328 feet.			

Square Measure.

1 square centimeter	= 0.1550	} 1 square inch=6.452 square centimeters.	
sq. in.			
1 square decimeter	= 0.1076	} 1 square ft.=9.2903 square decimeters.	
sq. ft.			

Measure of Volume.

1 cu. centimeter	= 0.061 cu. in.	} 1 cu. in.=16.39 cu. centimeters.	
in.			
1 cu. decimeter	= 0.0353 cu. ft.	} 1 cu. ft.= 28.317 cu. decimeters.	
ft.			

1 gram.	= 0.0527 ounce	{ Weights }	1 ounce=28.35 grams.
1 kilogram	= 2.2046 lbs		1 lb.=0.4536 kilogram

HELP IN CASE OF ACCIDENTS.

Drowning. 1. Loosen clothing, if any. 2. Empty lungs of water by laying body on its stomach and lifting it by the middle so that the head hangs down. Jerk the body a few times. 3. Pull tongue forward, using handkerchief, or pin with string, if necessary. 4. Imitate motion of respiration by alternately compressing and expanding the lower ribs, about twenty times a minute. Alternately raising and lowering the arms from the sides up above the head will stimulate the action of the lungs. Let it be done gently but persistently. 5. Apply warmth and friction to extremities. 6. By holding tongue forward, closing the nostrils and pressing the "Adam's apple" back (so as to close entrance to stomach), direct inflation may be tried. Take a deep breath and breathe it forcibly into the mouth of patient, compress the chest to expel the air, and repeat the operation. 7. **DON'T GIVE UP!** People have been saved after HOURS of patient, vigorous effort. 8. When breathing begins, get patient into a warm bed, give WARM drinks, or spirits in teaspoonfuls, fresh air and quiet.

Burns and Scalds. Cover with Cooking Soda, and lay wet cloths over it. Whites of Eggs and Olive Oil. Olive or Linseed Oil, plain, or mixed with Chalk or Whiting.

Lightning. Dash cold water over the person struck.

Sunstroke. Loosen clothing. Get patient into shade, and apply ice-cold water to head.

Mad Dog or Snake Bite. Tie cord tight above wound. Suck the wound and cauterize with caustic or white-hot iron at once, or cut out adjoining parts with a sharp knife.

Venomous Insects' Stings, &c. Apply weak Ammonia, Oil, Salt Water, or Iodine.

Fainting. Place flat on back; allow fresh air and sprinkle with water.

Tests of Death. Hold mirror to mouth. If living moisture will gather. Push pin into flesh. If dead the hole will remain, if alive it will close up.

Cinders in the Eye. Roll soft paper up like a lamp lighter, and wet the tip to remove, or use a medicine dropper to draw it out. Rub the other eye.

Fire in One's Clothing. *Don't run*,—especially not down stairs or out of doors. Roll on carpet, or wrap in woolen rug or blanket. Keep the head down, so as not to inhale flame.

Fire in a Building. Crawl on the floor. The clearest air is the lowest in the room. Cover the head with a woolen wrap, wet if possible. Cut holes for the eyes. Don't get excited.

Fire in Kerosene. *Don't use water*, it will spread the flames. Dirt, sand or flour is the best extinguisher; or smother with woolen rug, tablecloth or carpet.

ANTIDOTES FOR POISON.

First.—Send for a physician.

Second.—Induce vomiting, by tickling throat with feather or finger; drinking hot water or strong mustard and water. Swallow sweet oil or whites of eggs.

Acids are antidotes for **Alkalies**, and *vice versa*.

Special Poisons and Antidotes.

Acids.—Muriatic. Oxalic. { Soap-suds, mag-
Acetic. Sulphuric (Oil { nesia, lime-
of Vitriol.) Nitric (Aqua { water.
Fortis).

Prussic Acid. { Ammonia in water. Dash
water in face.

Carbolic Acid. { Flour and water, mucila-
ginous drinks.

Alkalies.—Potash. Lye. { Vinegar or lemon
Hartshorn. Ammonia. { juice in water.

Arsenic.—Rat Poison. { Milk, raw eggs, sweet
Paris Green. { oil, lime water, flour
and water.

Bug Poison.—Lead. Salt- { Whites of eggs,
petre. Corrosive Subli- { or Milk in
mate. Sugar of Lead. { large doses.
Blue Vitriol.

Chloroform. { Dash cold water on head and
Chloral. { chest. Artificial respiration.
Ether.

Carbonate of Soda.— { Soap-suds and mucil-
Copperas. Cobalt. { aginous drinks.

Iodine.—Antimony. { Starch and water, astring-
Tartar Emetic. { gent infusions, strong
tea.

Mercury and its { Whites of eggs, milk, mu-
Salts. { cilages.

Opium.—Morphine. { Strong coffee, hot bath.
Laudanum. Pare- { Keep awake and mov-
goric. { nothing ing at any cost.
Powders or Syrups.

AMERICAN AMATEUR ATHLETIC RECORDS.

Corrected Nov. 18, 1907, by the A. A. U.
Championship Track and Field Events.

100 yds. dash—9 3-5s. Dan. J. Kelly.
220 yds. dash—21 1-5s. Kelly and Wefers.
440 yds. run—47s. M. W. Long.
880 yds. run—1m. 53 2-5s. C. H. Kilpatrick.
1 mile run—4m. 15 3-5s. T. P. Coneff.
2 mile run—9m 27 4-5s. Alex. Grant.
120 yds. (high) hurdles—15 1-5s. Kraenzlein.
220 yds. (low) hurdles—25s. A. C. Kraenzlein.
Running high jump—6 ft. 5 5-8in. Sweeney.
Running broad jump—24ft. 7 1-4in. Prinzlein.
Pole Vault—12ft. 5 1-2in. W. P. Dray.
Shot Put (16 lb.)—49ft. 7 1-4in. Ralph Rose.
Hammer Throw (16 lb.)—173ft. 7in. McGrath.
Discus—136ft. 10in. (free style), M. J. Sheridan.
56lb. weight—38ft. 8in. J. J. Flanagan.
All-Around Champion (Individual) 7150 1-2
Points, M. J. Sheridan.

Other Records.

5 Mile Run—25m 23 3-5s. E. C. Carter.
10 Mile Run—52m 38 2-5s. W. D. Day.
Marathon Race (25 mile)—2hrs. 29m. 23 3-5s.
J. J. Caffery.
Standing High Jump (no weights)—5ft. 5 1-4in.
R. C. Ewry.
Standing Broad Jump (no weights)—11ft.
7-8in. R. C. Ewry.
Fence Vault—7ft. 3 3-4in. C. H. Atkinson.
High Kick (with run)—9ft. 8in. C. C. Lee.
Hitch and Kick (with run)—9ft. 1in.
C. R. Wilburn.
Rope Climb (hands only)—18ft. (up), 3 3-5s.
Edward Kunath.
Running Hop, Step and Jump—48ft. 6in.
E. B. Bloss.
Skating—1 mile, 2m. 36s. J. Neilson.
Skating—100 yds. 9 4-5s. J. S. Johnson.
Three Standing Broad Jumps—35ft. 8 3-4in.
R. C. Ewry.
Walking—1 mile, 6m 29 3-5s. E. P. Murray.
Pull Up (chinning)—65 times. H. H. Seelye.

Acquatic Records.

25 yds. (straightaway)—11 2-5s. C. M. Daniels.
50 yds (straightaway)—24 4-5s. C. M. Daniels.
100 yds. (3 turns)—56s. C. M. Daniels.
(Continued on page 44.)

Y. M. C. A. ATHLETIC LEAGUE.

The Athletic League of the Young Men's Christian Associations of North America was formed October 3, 1895. Its objects are to foster clean sport and all-round physical development. With these objects in view it assumes control of all competitive athletic sports of gymnastics, indoor or outdoor, held by associations that join the league. It is allied to the Amateur Athletic Union of the United States, also the Canadian Amateur Athletic Union, and is represented by one member on the Board of Governors of each organization.

There are 153 associations in the League, having 3,100 men registered in the A. L. N. A., season Nov. 1, 1906 to Oct. 31, 1907.

The Secretaries are Gus J. Fisher and Frederick B. Barnes, 3 West 29th St., New York City.

North American Indoor Records.

40-yd. dash, 4 4-5 sec.

75-yd. dash (around curves), 9 sec.

100-yd. dash (around curves) 11 1-5 sec.

220-yd. dash (around curves) 26 4-5 sec.

Standing broad jump, 10 ft. 3¼ in.

Standing high jump, 4 ft. 10 1-8 in.

Two standing broad jumps, 21 ft. 3¼ in.

Three standing broad jumps, 32 ft. 11½ in.

Standing hop, step and jump, 28 ft. 5 in.

Running high jump, 5 ft. 10¼ in.

Running high dive, 6 ft. 1 ¾ in.

Running high jump from spr'g b'd, 7 ft. 10 in.

Running high dive from spr'g b'd, 8 ft. 6½ in.

Running long dive, 14 ft. 8 in.

Fence vault, 7 ft.

Running high kick, 9 ft. 3¾ in.

Running hitch and kick, 9 ft.

Pole vault for height, 10 ft. 7¾ in.

One-quarter mile run, (21 laps), 58 sec.

One-half mile run, (21 laps) 2 min. 10 sec.

Three-quarters mile run, 3 min. 52 2-5 sec.

One mile run, 4 min. 45 3-5 sec.

Potato race, 1 min. 40 sec.

18-ft. rope climb, 4 3-5 sec.

Putting 12-lb. shot, 48 ft. 9¾ in.

Putting 16-lb. shot, 41 ft. 10 in.

25-yd. swim, 13 1-5 sec.

50-yd. swim 29 sec.

100-yd. swim 1.05 2-5 sec.

220-yd. swim, 3.07 2-5 sec.

Plunge under water swim, 236 ft. 6 in.

North American Outdoor Records.

50-yard run, 5 3-5 sec.
100-yard run, 10 sec.
220-yard run, 22 sec.
440-yard run, 52 3-5 sec.
880-yard run, 2 min. 3 1-5 sec.
One mile run, 4 min. 38 4-5 sec.
Two mile run, 10 min. 19 3-5 sec.
120-yard hurdle, 16 1-5 sec.
220-yard hurdle, 27 3-5 sec.
Standing broad jump, 10 ft. 8 $\frac{3}{4}$ in.
Three standing broad jumps, 33 ft. 9 in.
Standing high jump, 4 ft. 10 in.
Running broad jump, 21 ft. 11 $\frac{1}{2}$ in.
Running high jump, 5 ft. 8 in.
Running hop, step and jump, 41 ft. 7 in.
Pole vault for height, 11 ft. 1 7-8 in.
12-lb hammer, without turn, 115 ft. 10 in.
12-lb. hammer, with turn, 123 ft. 5 in.
16-lb. hammer, without turn, 88 ft. 5 in.
Putting 12-lb. shot, 46 ft. 6 1-4 in.
Putting 16-lb. shot, 38 ft. 2 in.
Discus, free style, 83 ft. 10 in.

The Physical Directors' Society of the Young Men's Christian Associations of North America was organized at Lakewood, N. Y., June, 1903.

The object of the organization is the promotion of Physical Training in general, and its relation to the Young Men's Christian Association in particular. Membership consists of two classes—Active and Associate.

The Actives are Y. M. C. A. Physical Directors and Assistant Physical Directors, who have been such for one year, and Associates, any Y. M. C. A. member who may be interested in Physical Training.

The present officers of the Society are George J. Fisher, M. D., New York City, President; Wm. E. Day, Dayton, Ohio, Sec'y-Treasurer.

The above with E. W. Wilder, Worcester, Mass.; H. R. Hadcock, Winnipeg, Man.; J. S. Ford, Nashville, Tenn.; J. H. Crocker, ex-officio, Toronto, Ont., constitute the Executive Committee.

The society has made for uniformity in the physical work of the association. A bibliography of physical training has been published consisting of over 6000 titles. Likewise a uniform manual of marching, an official nomenclature and a uniform system of measurements have been adopted.

FIRST AID **To the Unconscious.**

DIAGRAM FOR FIRST AID TO THE UNCONSCIOUS.

	FACE	EYES	MOUTH	RESPIRATION	PULSE	MOTION
CONCUSSION COMPRESSION APOPLEXY	FLUSHED	UNEQUAL TO LIGHT & TOUCH & IN SIZE	TO ONE SIDE	SNORTING	VERY FULL SLOW	ONE SIDED
INTOXICATION	FLUSHED	ALIKE NORMAL	—	DEEP	FULL FAST	PRESENT
SUNSTROKE	FLUSHED	ALIKE	—	DEEP	FULL SLOW	PRESENT
EPILEPSY	PALE	ALIKE NORMAL	TWITCHING	IRREGULAR	NORMAL	RIGID
FAINTING	PALE	ALIKE	—	SHALLOW	WEAK	MORE OR LESS PRESENT
OPIUM POISONING	OFTEN PALE	LIKE PIN HEADS	—	DEEP	SLOW	MORE OR LESS PRESENT

FIRST AID

To the Unconscious.

Under each heading in the top line is given the symptom expressed for the causes in the first column. It will be noted that each cause of unconsciousness has some peculiar expression that distinguishes it from others, while other expressions may be alike for several causes. As, for instance, inequality of eyes and motion for apoplexy—full, fast pulse for intoxication, etc. These peculiar expressions should be looked for before deciding on any cause, as what might be taken for a case of intoxication may be sunstroke, requiring prompt and skilful treatment.

Note. The distinguishing expression of intoxication is the fast pulse as compared with the slow pulse of sunstroke, concussion and apoplexy.

Send for a physician at once and apply the treatment given below until he comes.

Brain Concussion, Compression or Apoplexy—

Lay the patient down, head slightly raised, loosen clothing, keep the head cool and feet warm. Keep quiet and don't give stimulants.

Intoxication—Give an emetic. If the skin is cold and pulse feeble, apply heat and friction.

Sunstroke—Lie down in shade. Apply continuously ice or cold to the entire surface of the body. Ice pack behind ears and about head.

Epilepsy—Lay the person down and keep him from injuring himself.

Fainting—Lay down with head lower than body—apply smelling salts to nose and sprinkle cold water on face.

Opium Poisoning—Empty the stomach. Keep the patient walking, slapping with a towel. Keep him awake.

Lightning—Or electric shock, treat as in resuscitation for drowning.

Venomous Insect Stings—Alcoholic solution of menthol.

This diagram was arranged by Dr. G. T. Swarts, R. I. State Registrar and Secretary State Board of Health, for First Aid Classes.

CHRONOLOGY

of Gymnastic Events.

- 130 Galen, Roman Physician. Born.
- 900 Tournaments instituted.
- 1540 First Book written on Physical Education, by Sir Nicholas Bacon.
- 1759 Guts Muths, Director of Gymnastics in Germany. Born.
- 1776 Pehr Henrich Ling, Born.
- 1778 Fredrich Ludwig Jahn, Born.
- 1811 Jahn's Gymnasium opened.
- 1817 Military Gym. est'd at West Point.
- 1822 Captain Clias, Gymnasium Instructor in English Army.
- 1825 Tremont Gymnasium opened.
- 1825 Gym. est'd at Round Hill School.
- 1826 Gym. est'd at Harvard University.
- 1826 First Turnverein in the U. S. The Cincinnati, O., Turngemeinde.
- 1856 First Gymnasium Building at Princeton College.
- 1859 Gymnasiums built at Amherst, Harvard and Yale.
- 1860 First Y. M. C. A. Gymnasium opened Nov. 16, at San Francisco, Cal.
- 1861 Dr. Hitchcock appointed Director at Amherst College.
- 1861 Maclaren appointed Director at Aldershot, England.
- 1866 North American Gymnastic Union Normal School est'd in New York.
- 1869 Dr. Sargent introduced modern system of Pulley Weight Exercises in class drills at Bowdoin College.
- 1869 Second Y. M. C. A. Gymnasium est'd in New York.
- 1874 Third Y. M. C. A. Gymnasium est'd at Boston. R. J. Roberts, Dir.
- 1878 The Allen Gymnasium for Women est'd in Boston, by Mary E. Allen.
- 1879 Hemenway Gymnasium opened.
- 1881 Dr. Sargent's Normal School est'd.
- 1883 Indoor Gallery Running Tracks invented by R. J. Roberts.
- 1885 American Physical Education Association organized.
- 1885 First Y. M. C. A. Training School.
- 1888 Swedish Educational Gymnastics introduced in Boston by Baron Nils Posse.
- 1889 November. Physical Training Conference held in Boston.

SWEDISH DAYS—ORDER.

CLASSIFICATION.

AIM.

GENERAL.

1. INTRODUCTIONS. Transition from mental to physical activity.
2. ARCH-FLEXIONS. To cultivate extensibility of expiratory muscles, *i.e.*, to supple the chest.
3. HEAVING MOVEMENTS. To cultivate contractility of inspiratory muscles; to elevate the chest.
4. BALANCE MOVEMENTS. To cultivate equilibrium in ordinary positions and correct general posture.

SPECIAL.

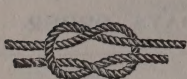
5. SHOULDER BLADE MOVEMENTS. To increase the sphere of activity of shoulder-joint and skill of hands.
6. ABDOMINAL EXERCISES. To improve digestion and support viscera.
7. LATERAL TRUNK MOVEMENT. To affect large vessels and develop waist muscles.

GENERAL.

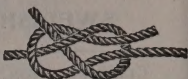
8. SLOW LEG-MOVEMENTS. Diminish arterial pressure. Equalize circulation.
9. LEAPING (running, jumping and vaulting.) Develop general co-ordination, control and speed.
10. RESPIRATORY EXERCISES. Produce normal respiration. Remove venous congestion.

Condensed from Posse's Special Kinesiology of Educational Gymnastics.

KNOTS AND HITCHES.



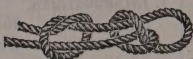
SQUARE KNOT.



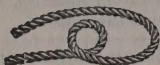
WEAVER'S KNOT.



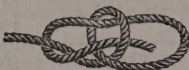
SLIP KNOT.



FLEMISH LOOP.

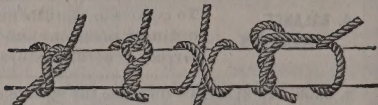


START.



FINISH.

BOWLINE.



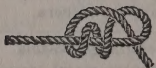
HALF.

TIMBER.

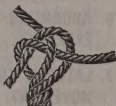
CLOVE.

TIMBER AND HALF.

BOOM HITCHES.



STEVEDORE.



WALL.

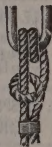
END KNOTS.



BLACKWALL.



CATS PAW.



TURN AND HITCH

HOOK HITCHES.

The square knot is used for small ropes and cord. Tie it as shown, both ends passing out together, or it may slip.

The weaver's knot or becket-bend is the best and quickest way to unite the ends of string or cord. It is also a good knot for ropes.

The bowline is the best knot for making fast to a post or ring. It will never slip and is easy to loosen.

Hitches are used in lifting lumber, logs, etc., and in making fast to hooks. The 'timber and half hitch' is especially safe.

End knots are used to prevent a rope being drawn through a hole.



RIGHT.



WRONG.



FINISHED.

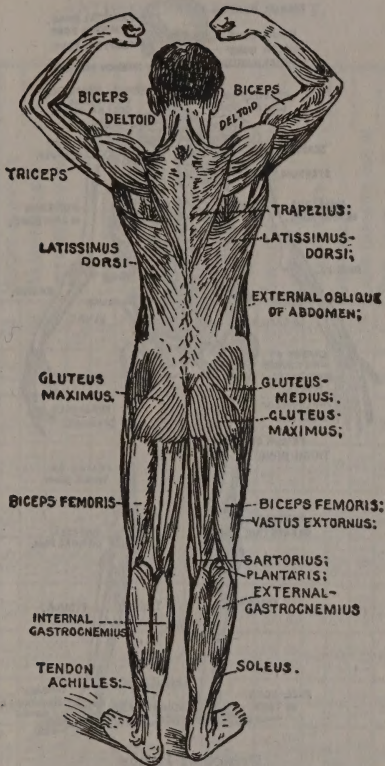
CLEAT HITCHES.

To make fast to a cleat, hauling on the rope with the right hand uppermost, pass the rope to the right side of the cleat, under the lower horn, over the upper horn, again (from right to left) under the lower horn, press the rope against the lower left side of the cleat with the thumb of the left hand to prevent its slipping, form a loop in the rope with the right hand, the rope crossing the cleat from left to right, drop this loop over the top horn, and pull tight. If this is properly done the rope will appear as in the first cut, crossing the cleat from the lower left to the upper right corner, and binding down the loose end of the rope to the front of the cleat.

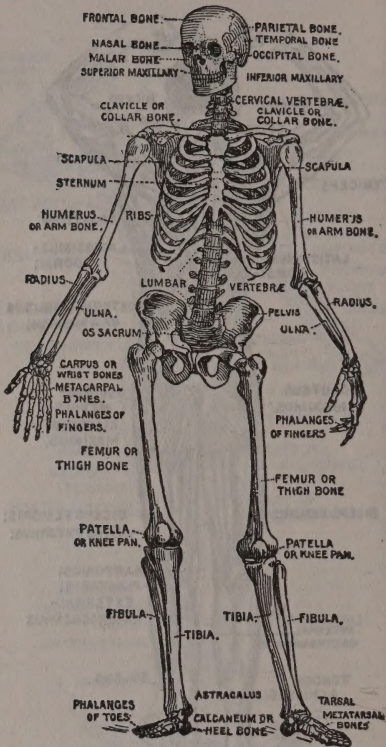
To loop up the loose rope neatly, pass the rope to the left hand (held two or three feet from the cleat) and over the upper horn until all but about four feet is looped up, wind the loose end around the hank thus formed downward, and pull the end through the hank at the bottom to fasten it.



**Principal Anterior
Muscles.**



**Principal Posterior
Muscles.**



Principal Bones
of the Human Body.

ANTHROPOMETRIC CHART.

MALE.

63	64	65	66	67	68	69	70	71	72	73	HEIGHT IN INCHES
100	110	118	125	132	138	145	153	160	170	180	WEIGHT IN LBS
64	65	66	67.5	68.2	70	71.2	72.5	74	75	76	ARM STRETCH IN INCHES
12	12.7	13	13.3	13.5	13.8	14	14.3	14.6	15	15.5	NECK GIRTH
29	31	31.5	32	33	34	34.9	35.8	36.7	37.7	39	CHEST, NATURAL
31	33	33.5	34	35	36	37	38	39	40	41.5	CHEST, INFLATED
25	26	26.7	27.3	28	28.7	29.4	30.3	31	32.2	33.5	WAIST
17	18	18.6	19	19.6	20.2	20.8	21.4	22	22.8	24	THIGH
12	12.4	12.7	13	13.4	13.8	14	14.4	14.8	15.3	16	CALF
9.5	9.9	10.3	10.6	11.2	11.6	11.8	12.4	12.8	13.4	14	BICEPS, ARM UP
8.8	9	9.3	9.5	9.8	10.2	10.4	10.7	11	11.5	12	FOREARM
14	14.5	15	15.2	15.6	16	16.4	16.8	17	17.5	18	SHOULDER BREADTH, INCHES
220	260	290	310	340	370	400	430	460	500	550	LIFT IN LBS
4	5	6	7	8	10	11	12	13	14	15	PULL UP, TIMES
60	66	72	78	84	90	98	110	120	135	150	GRIP IN LBS
170	185	200	217	233	250	267	274	300	315	330	LUNG CAPACITY, CUB. IN.
1	5	10	18	33	50	33	18	10	5	1	PER CENT.

This chart and the one following are compiled from averages of several anthropometric charts, and are for persons

ANTHROPOMETRIC CHART. FEMALE.

58	59	60	61	62	63	64	65	66	67	68	HEIGHT IN INCHES
90	95	100	104	113	120	127	136 ^x	140	150	160	WEIGHT IN LBS
58	60.3	61.3	61.3	62.3	63.5	64.7	65.7	66.5	67.5	69.3	ARM STRETCH IN INCHES
11	11.4	11.6	11.8	12	12.2	12.5	12.8	13	13.3	13.8	NECK GIRTH
26	27	27.8	28.6	29.2	30	30.8	31.4	31.8	33	34.5	CHEST, NATURAL
28	29	29.8	30.6	31.2	32	32.8	33.4	33.8	35	36.5	CHEST, INFLATED
21	22	22.6	23.1	23.8	24.5	25.2	25.9	26.7	27.8	29	WAIST
18	19	19.6	20.1	20.8	21.5	22.2	22.9	23.7	24.8	26	THIGH
11.5	12	12.4	12.7	13	13.3	13.6	13.9	14.2	14.6	15	CALF
8.5	9.2	9.6	9.8	10.2	10.5	10.8	11.2	11.5	12	13	BICEPS, ARM UP
7.5	8	8.2	8.4	8.7	9	9.3	9.6	9.8	10	10.5	FOREARM
13	13.5	13.9	14.1	14.4	14.5	14.7	14.8	15.1	15.5	16	SHOULDER BREADTH, INCHES
80	100	112	125	145	175	202	235	260	280	300	LIFT IN LBS
30	35	40	45	50	55	55	60	65	70	80	GRIP IN LBS
80	105	117	128	140	150	160	170	180	190	200	LUNG CAPACITY, CUB. IN.
1	5	10	18	33	50	33	18	10	5	1	PER CENT.

who have attained their full growth. Height is taken as a basis for comparison. Linear measurements are in inches and tenths.

To compare one's measurement with an average individual of the same height, first get all of the measurements and tests given in the column at the right that can be conveniently obtained. These may be taken as follows:

Height—Without shoes.

Weight—Without clothes, or deduct 4 to 10 lbs. for clothing.

Arm Stretch—Distance from tip to tip of fingers with arms stretched sideways.

Neck—Girth in centre; take girth with a tape or string and measure on a rule.

Chest Natural—Arms hanging easily at the side; measure over the nipples on men and above the breasts on women.

Chest Inflated—Same measurements taking as full a breath as possible.

Waist—At the smallest part.

Thigh—At the largest part.

Calf—At the largest circumference.

Biceps arm up—At the greatest circumference arm bent up hard.

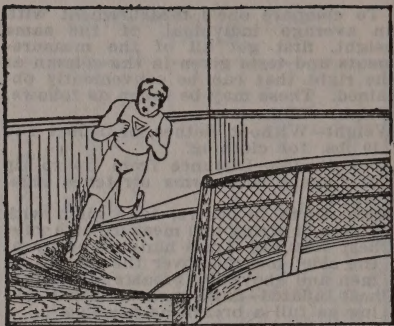
Forearm—At the largest part, arm extended, fist closed tight.

Shoulder breadth—With arms at side measure about 2 inches below the ends of the shoulder blades.

Lift—Grip and Lung capacity cannot easily be taken without proper instruments.

Per Cent.—These figures indicate that about the percentage reach the measurements in the column above, i. e., 50 per cent. of men are 68 inches high.

To plot measurements and compare them, mark the measurements on the line under the corresponding figures, i. e., height 64 inches under the figure 64 in the line of figures to the left of height. If the person measured is symmetrical, all the other measurements will be in the vertical column under 64. This, however, never occurs. If the weight is 137 pounds mark the line a proportionate distance to the right of the spot under 136, as at X on the female chart. When all the measurements are thus plotted connect the points by lines. The zig-zag line thus produced represents the individual as compared with the average of other individuals of the same height.



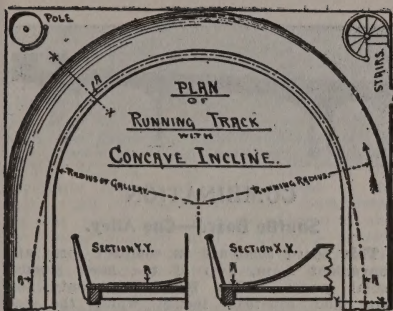
INDOOR RUNNING TRACK.

The indoor running track is a growth, an evolution. A yielding surface closely approximating spring turf was secured by the felt and canvas track invented by R. J. Roberts, the well known Boston Y. M. C. A. Gymnasium Director. The concave incline devised by Wm. L. Coop of the Narragansett Machine Co., made speed possible and safe; and the inclined rail (suggested and put into the Springfield Young Men's Christian Association Training School Gymnasium, by Dr. Luther Halsey Gulick), made narrower galleries possible by moving the rail out of the way.

The Roberts Track, patented May 1, 1889, is very durable. A coat of paint every three or four years renews the surface and prevents wear of the canvas. It does this track no harm to walk on it with ordinary shoes, although the continuous use of it with nailed shoes is not advisable.

The concave incline, (patented October 7, '90), as shown in the above illustration, being level on the inside, is the correct form for walking, and having its greatest incline on the outside, or largest radius, it is perfectly adapted for running. In fact, it is suitable for all speeds, from walking to sprinting.

The Roberts Track made indoor running a possibility. The concave incline made it a success. No first-class gymnasium is now built without both.



RUNNING TRACK INCLINES.

Everything depends on the radius of track corners or ends. If this is too small it is impossible to design an incline that will permit high speeds or even comfortable running at any speed. The following table shows the angle of inclination of the track for a speed of 30 feet per second (100 yards in 10 seconds), the maximum sprinting speed:

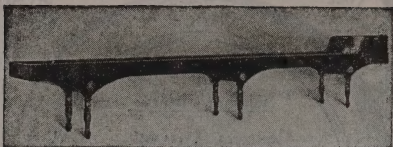
Radius 15 feet.	Incline 62 Degrees.
" 20 "	" 55 "
" 25 "	" 48 "
" 30 "	" 43 "
" 35 "	" 39 "
" 40 "	" 35 "

As it has not been found practical to make an incline greater than 45 degrees, this table would indicate that 30 feet is the smallest radius desirable for maximum speed.

Athletes are never satisfied with anything short of their best; hence a track to be used by them must be designed for the highest speed.

The concave incline should always be designed specially for the radius and speed required. The Roberts Track and Concave Incline patents are both our property. We will be pleased to furnish correct plans, with estimates, free of charge.

NARRAGANSETT MACHINE CO.,
Providence, R. I.



COMBINATION

Shuffle Board—Cue Alley.

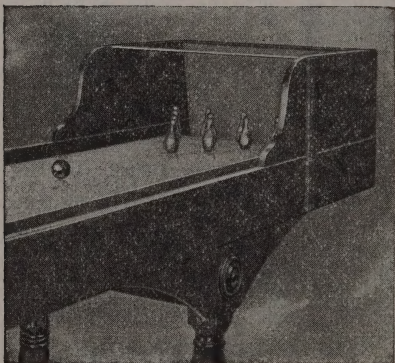
This board combines in compact form and convenient form, two of the most popular social games. The Board is twenty feet long and nineteen inches wide; the bed being of white wood, the side and legs finished antique green oak.

A detachable hood changes the Shuffle Board into a Cue Alley. Two regular billiard cues, three balls and a set of miniature pins are included.

This is a handsome, substantial board; appropriate for any recreation room.

For prices and further particulars, write

NARRAGANSETT MACHINE CO.,
Providence, R. I.



RULES.

For Shuffle Board.

The game is played as follows:

There are eight "Pieces," four A and four B. Two or four persons play, each taking four. The game is usually to score 21 points. The players shuffle in turn, each alternately sending down a "piece." If four play, two opponents are placed at each end of the board. All the pieces are sent down, making one round; the score is then read and the pieces returned until a game is played. The pieces are sent down with a peculiar twist or whirl, causing them to spin along on the smooth board.

The score is taken only at the end of each round, each piece counting as follows:

Each "Piece" laying on or beyond the "Duce" line is "in" and scores 2 points for its player.

A "Ship" is a piece that stops overhanging the end of the board, and counts 3 points.

When a round is finished with no piece "in," the nearest piece to "Duce" line counts 1 point.

Rebounding "Pieces" do not count and must be removed.

Bowling Rules.

The rules for Bowling and score keeping are the same as given elsewhere for regulation alleys. The cue makes accurate playing possible and adds all the fascination of billiards.

MANILLA ROPE.

Ins. Circ.	Ins. Diam.	Foot. Wt. Per	Load. Breaking
$\frac{3}{4}$	.239	.019	560
1	.318	.033	784
1½	.477	.074	1568
2	.636	.132	2733
2½	.795	.206	4278
3	.955	.297	6115
3½	1.11	.404	8534
4	1.27	.528	11558
4½	1.43	.668	14784



98 Standard.

WOOD LOCKERS.

We carry in stock ready for immediate delivery the following sizes of 98 Standard Wood Lockers.

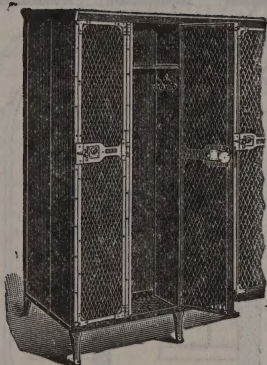
Stock Sizes.

12 in. wide..	12 in. deep ..	36 in. high..	1 tier
12 in. wide..	12 in. deep ..	42 in. high..	1 tier
12 in. wide..	15 in. deep ..	42 in. high..	1 tier
15 in. wide..	15 in. deep ..	42 in. high..	1 tier
12 in. wide..	12 in. deep ..	60 in. high..	2 tiers
12 in. wide..	15 in. deep ..	60 in. high..	2 tiers
15 in. wide..	15 in. deep ..	60 in. high..	2 tiers

These lockers are made of kiln dried whitewood, finished with one coat of shellac inside, two coats outside; the latter rubbed between coats. Each door has two iron ventilating panels. The backs may be of wood or wire. Write for discounts.

NARRAGANSETT MACHINE CO.,

Providence, R. I.



STEEL LOCKERS.

Regular Sizes.

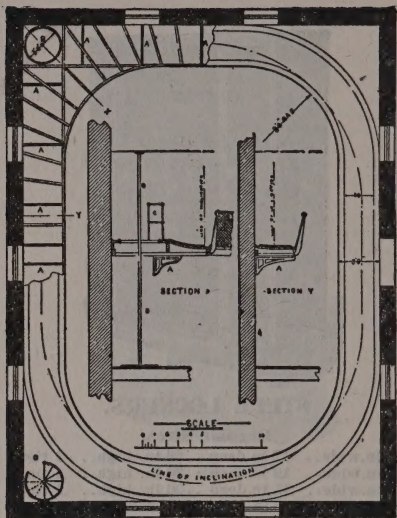
12 in. wide..	12 in. deep	..36 in. high..	1 tier
15 in. wide..	12 in. deep	..36 in. high..	1 tier
12 in. wide..	15 in. deep	..36 in. high..	1 tier
15 in. wide..	15 in. deep	..36 in. high..	1 tier
12 in. wide..	12 in. deep	..42 in. high..	1 tier
15 in. wide..	12 in. deep	..42 in. high..	1 tier
12 in. wide..	15 in. deep	..42 in. high..	1 tier
15 in. wide..	15 in. deep	..42 in. high..	1 tier
12 in. wide..	12 in. deep	..60 in. high..	2 tiers
12 in. wide..	12 in. deep	..72 in. high..	2 tiers
15 in. wide..	12 in. deep	..72 in. high..	2 tiers
12 in. wide..	12 in. deep	..72 in. high..	2 tiers
12 in. wide..	15 in. deep	..72 in. high..	2 tiers

This locker is built of steel, with sheet metal partitions and door frames of angle steel. All parts are made unusually strong and stiff. The doors have expanded metal panels and are put together with corner brackets and a lock plate across the centre, making them exceedingly strong and rigid. All other parts are riveted or bolted in the strongest manner.

For fuller information, prices, etc., write to the

NARRAGANSETT MACHINE CO.,

Providence, R. I.



ESTIMATES.

Special Plans and Lists.

We Originated the Custom of Furnishing to Committees, Architects, etc., specially made plans and lists with estimates of cost for complete Gymnasium outfits and continue to give such plans our best attention, selecting the apparatus on a scientific basis approved by leading authorities.

To make these plans we require full dimensions of the Gymnasium, height of gallery and railing, the location of the beams overhead and all windows, doors, etc. If you are fitting a Gymnasium, write us.

NARRAGANSETT MACHINE CO.,

Providence, R. I.

NOTES FOR ARCHITECTS.

Gymnasiums. Space required for each person exercising in classes, etc., 40 sq. ft. of floor surface, not less than 30.

The trusses or ceiling beams should clear the main floor 20 feet; this being the correct height for suspending apparatus. No more than 3 or 4 feet more or less should be used in any case.

A Board 6 or 7 inches wide should be run entirely around the room with the centre 5 feet from the floor, for the support of wall apparatus, Pulley Weights, etc.

The gallery for running track should be 10 or 11 feet clear from the floor. An inclined rail adds to its width. The main floor should be clear of all posts, piers, radiators, etc.

Lights, windows and everything breakable should be protected by strong wire cages or screens.

Estimate (Preliminary). For floor, wall and suspended apparatus from 30 cents to 50 cents per sq. ft. floor surface, according to quality and amount.

Running Track. In 5 ft. wide gallery. Cost of concave inclined floor, laid on rough floors, including flooring corners, \$1.50 to \$2.00 per running foot. Roberts's (canvas and felt) track, 3½ feet wide \$1 per running foot laid.

Lockers. Space required. Allow about 2½ ft. floor space for each 12x12 locker, for aisles, etc., when lockers are in two tiers.

Bowling Alleys. Space required for one pair of regulation alleys, 82 feet long, 10½ feet wide, clear of all obstructions. For a single alley, 5 feet 4 inches in width.

Foundation may be concrete (tar or cement), or firm loam or gravel.

Estimate. (Preliminary). Standard alleys per pair \$700, including furniture.

Above estimates average high. Write for close figures or proposals.

NARRAGANSETT MACHINE CO.,

Providence, R. I.

See also Running Tracks, Lockers and Bowling Alleys on other pages.

PERSONAL.

Name.....

Address

If found injured take me to

and notify.....

Weight..... lbs.

Height..... feet..... inches.

Watch Case No..... Works No.

Bicycle No..... Locker No.

Hat..... Gloves

Drawers..... Shirt.....

Collar..... Cuffs

Shoes, Size..... Width.....

Undershirt..... Hose

WELLCOME INSTITUTE
LIBRARY

Coll. welMOmec

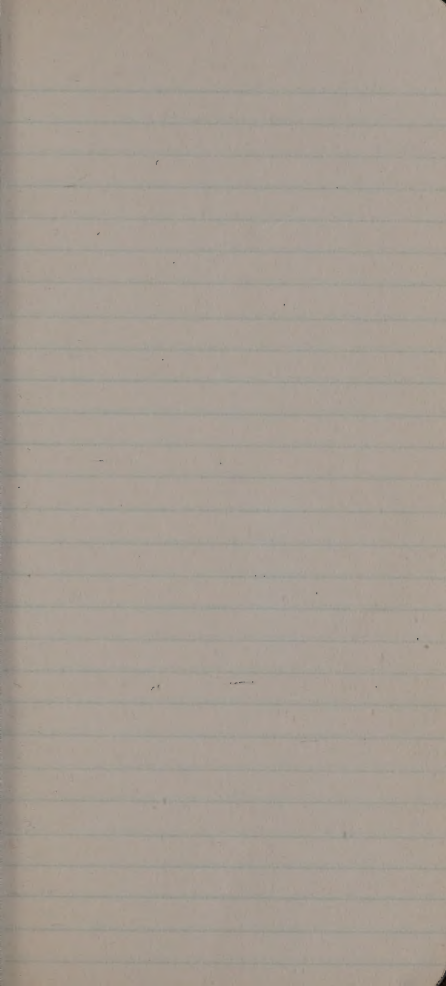
Coll. pam

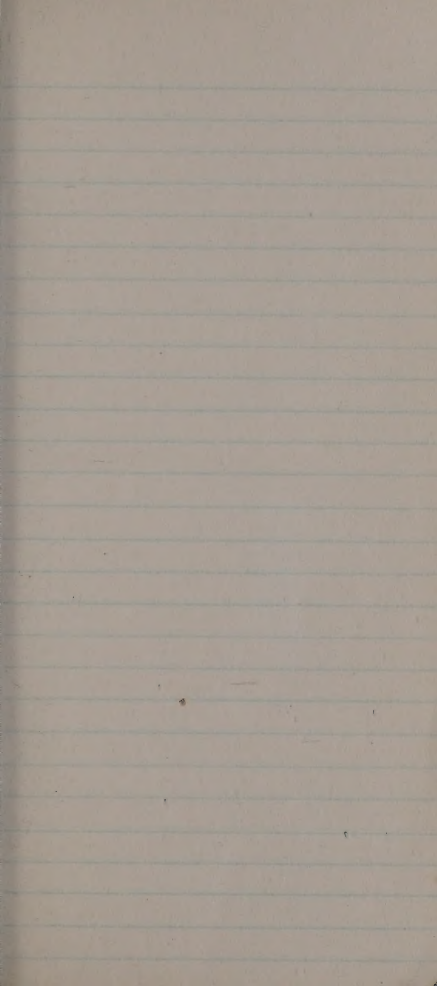
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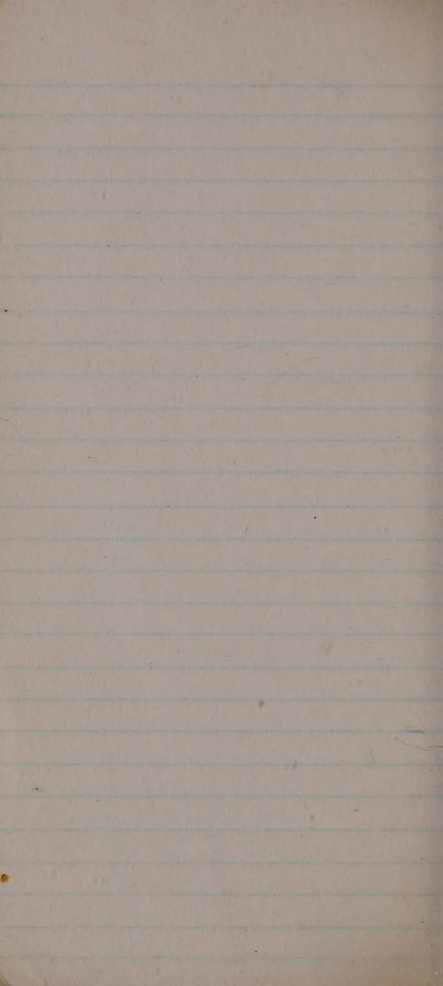
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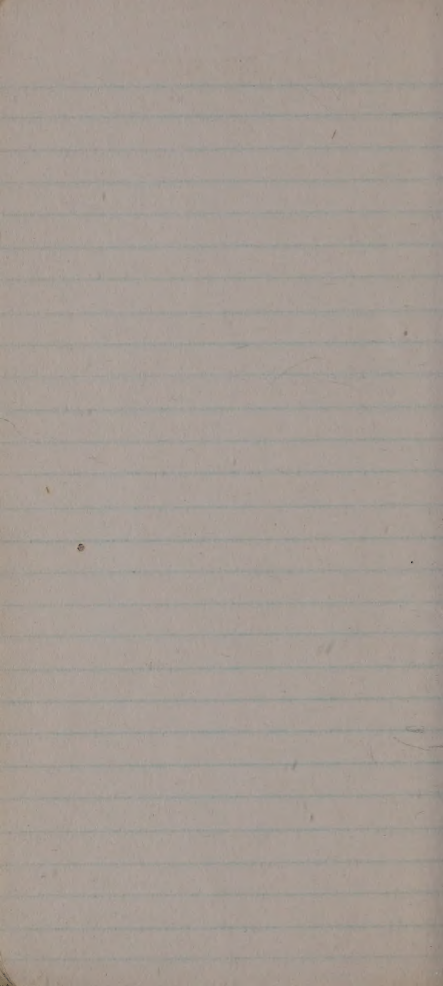
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BLANK FOR RECORD.

Record of

Running 100 yds.....

Running 440 yds

Running 1 mile.....

Hammer,..... lbs.

Shot,..... lbs.

Standing, High Jump.....

Running, High Jump.....

Standing, Broad Jump.....

Running, Broad Jump.....

Walking 1 mile.....

Pole Vaulting, Height.....

Bar Vaulting, Height.....



LOWNEY ATHLETIC ASSOCIATION,

LOWNEY CHOCOLATE CO.,

MANCHESTER, MASS.

BOWLING.

The mild exercise of bowling, particularly well adapted for adults, the social features of the game and its simplicity, all appeal to men seeking recreation after the worry and strain of business, and tend to make the game popular. Good alleys, balls and pins are necessary, and if the best are purchased at the start and given good care, they will last a long time. The alley beds should be of white rock maple, laid in the best manner, on solid foundations designed to avoid the bad effects of heat or moisture, and planed to an absolutely level and smooth surface. After a thorough sandpapering, finishing with No. 1 paper, they are ready for use; if they are to be used with a natural or white finish; or they may be polished.

White Finish:—The white finish is the most satisfactory and uniform to bowl on. The beds are lighter in color and the constant sanding necessary to keep them clean also keeps the bowling surface in the best possible condition. **Care:**—Keep the beds clean; sandpaper the entire body at least twice a week; daily is better. All marks should be sanded out. Provide light wood blocks, about 2 x 3 inches, 12 inches long, covered with cork or carpet, around which the sheet of sandpaper can be wrapped; teach the pin boys to do this work thoroughly and keep them at it.

Washing — Alleys that have been neglected may be washed but this should be done with great care. Soap and water or a strong alkali like Painters Savogran should be used; the latter should not be too strong or it will darken the wood. Do not use a mop; wash by hand. Wash a small space at a time and wipe it dry before the water has a chance to penetrate the wood.

Polished Alleys:—To a clean and perfectly sanded bed, apply three coats of white shellac, rubbing down each coat with No. 1-2 sand paper. Take care not to lap the coats of shellac as the laps cause ridges. Put on the polish with a soft woolen cloth, covering the entire bed and rub lengthwise of the beds with the polishing box until dry, which will take from one to two hours for each bed; apply three or four coats in this way. After rubbing the last coat, scatter fine pine sawdust over the beds and rub with the box until the polish is all taken up and the beds are evenly bright from end to end. Care:—Wipe the beds daily with a soft woolen cloth moistened with polish; rub hard and touch every spot. Polish with the box for half-an-hour to each bed. Once a week apply the polish liberally with a saturated cloth; rub it well in; polish half-an-hour with the box, then sprinkle on fine pine sawdust and use the box for half-an-hour. Lift the box frequently to get fresh sawdust. Sweep off the sawdust and wipe with a soft cloth. Don't wash a Polished Alley; if there are spots the polish will not remove use turpentine or brightener.

To polish old Alleys:—Replane and sand-paper them, then proceed as for new alleys. Replaning should always be done by experienced men. It is a job that requires plenty of "know how." Good carpenters or even floor planers are not necessarily alley planers. They don't "know how" and often do more harm than good.

General Cleaning:—Dust the gutters and runs daily and wipe them with a soft cloth. Remove and beat the Pit Mats and sweep out the pits. Keep clean.

Balls:—New balls are thickly covered with shellac. This is necessary to prevent their checking, but it should be all sanded off before they are used and the balls well rubbed with bed polish and wiped dry with soft cloth. When not in use the balls should be taken from the racks and placed in closed cupboards, or covered with close fitting duck covers,

made to cover the row of balls as they rest in the racks. If this is not done, the balls are liable to check, showing small cracks all over the surface, which run into larger ones in some places. This no manufacturer can guarantee against on the stock that is in the market at present. Balls thus cared for will dry slowly and not check; in fact, balls whether of old or new stock should be kept from currents of warm, dry air for at least one season and every time they are turned afterwards.

It is not worth while to re-turn too small balls. So much has to be taken off that they are generally too small for use.

Heating:—Steam pipes, radiators or inlets for hot air should only be placed at the ends of alleys. Steam pipes should not pass under or alongside of beds and should not be over them, unless well covered. The beds should be kept at as even a temperature and free from currents of air as possible.

Lighting:—Alleys should have a strong light over and in front of the pins and a mild evenly distributed light over the beds. Four or five incandescent lights over the pins and groups of two or three lights placed 10 feet apart over the beds is sufficient. Curtains of White Holland about 1 foot deep and $2\frac{1}{2}$ feet wide, back of each group of lights, will diffuse the light, reflect it evenly on the beds and keep it out of the bowler's eyes.

Lobbing or throwing the balls should be absolutely prohibited; it will ruin the beds. Each large ball should be sent back before another is bowled.

Space required:—A pair of regulation alleys require a space 82 feet long and $10\frac{1}{2}$ feet wide, clear of all obstructions; in addition room should be provided for spectators. The foundation may consist of 3 inches of tar concrete, or cement. The former is preferred on account of its freedom from moisture. The concrete may be omitted if the ground is hard and dry.

For further information send to the Narragansett Machine Co., Providence, R. I., for their catalogue "E."

CONDENSED BOWLING RULES.

A game consists of 10 frames.

A Frame consists of 10 pins placed on the triangle of spots 1 foot apart.

Each player is allowed 3 balls, which he must roll without stepping or sliding over the "Scratch Line."

A Strike is made when all the pins are knocked down by the first ball. It entitles the bowler to 10 points in that frame and as many more points as the next two balls knock down pins in succeeding frames. When the pins are all down, that frame is played and another player takes his turn.

A Spare is made when all the pins are knocked down by the first two balls. It entitles the bowler to 10 points in that frame and as many more as the first ball in the next frame knocks down.

The points gained by strikes and spares are in addition to those made by the balls in the succeeding frames.

Any strikes and spares remaining after the 10th frame is rolled are rolled immediately and count one point for each pin knocked down.

A foul ball is made by the player stepping or touching anything beyond the foul line. Pins knocked down by a foul ball or by a ball rolling in the gutter before it reaches the pins, or rebounding from the cushions, do not count, and must be reset before another ball is rolled. All such balls, however, count as balls rolled.

Fallen pins (deadwood) must be removed from the alley after each ball.

To keep a score a board or paper is ruled with two vertical spaces for each player and 12 horizontal lines, one for the names at the top, 10 for the 10 frames, and one for the totals. The points made (Pins knocked down by 3 or less balls) are set in the left column for each frame under the bowler's name, and the total score in the right column. A strike is marked double X or two parallel lines in the left column. A spare X or —. When the strike or spare is rolled in the next frame, the pins are added to the 10 already made and to the total of the right column.

CARE OF GYMNASIUM APPARATUS.

Periodical examinations should be made of all gymnastic apparatus. Annually, at least, all fastenings should be carefully examined and tested; not a casual look over, but a thorough search for hidden dangers. Each fastening should be reached by ladder or staging. Monthly all suspended apparatus should be tested and other apparatus thoroughly cleaned and looked over. Daily inspections should be made to see that all is in place and in good order, removing cracked and broken apparatus and making slight repairs. The proverb "A stitch in time saves nine" is an axiom in the gymnasium.

Ropes.

Examine all the fastenings, bolts, etc., and see if they are snug; also all splices, couplings, hooks, etc. Do not neglect this because they are high up and it is considerable trouble. Heated gases attack ropes, and in a few years destroy them, hence, they should be tested annually. Make a loop of small rope, about four feet long, secure one end to the ring or other rope to be tested, put a strong wooden bar in the end of the loop, and seat four average men on the bar. This is an easily made test, and is safe.

Bars and Guys.

Keep guys snug, but not too tight. Never use a wrench or bar to tighten a turn buckle. If they are too tight their strain alone may pull the fastenings out. Keep bars snug in their caps. Never turn a hickory or steel core bar over; if it gets bent, let it stay so. The fibres of the bottom have become accustomed to tensile strain and those of the top to compression; if you reverse them they will be sure to break. Never allow anyone with buttons on their clothing or shoes to get on a bar; a single scratch will start a break.

Heavy Apparatus.

The bolts and fastenings should be inspected and tightened if necessary at least once a month. See that the feet are in good condition, so they will not scratch the floor, that casters work right and their rolls are sound. Oil the hoisting mechanism of horses and bucks.

Pulley Weights.

Rods should be wiped with an oily rag or waste when they get so dry as to make a wispy sound as the weight holder slides on them.

Ropes in a gymnasium may wear out in a few years. In replacing them get the same kind of rope. Sash cord is not as good. Secure the ends to the handle by putting a small screw in the end of the rope and drawing it into the socket. Don't knot the rope. Keep the ropes up snug and tight, but not so tight as to raise the weights when not in use, as this prevents easy change of underlift weights.

Weight Holders.

Should a felt bearing require renewing, which seldom occurs, rub some liquid glue on the outside of the new felt, roll it up and push it into the new socket; when it dries the glue forms a hard shell on the outside of the felt, and prevents the bearing from coming out. Rub a good supply of plumbago grease into the felt as soon as it is dry.

Bearings, if of wood, may run many years without oil. Don't oil them until they squeak or call for it; then use only machine oil. Metallic bearings require oil often, once a month or more.

Calisthenic Apparatus.

Keep all racks in good condition. Don't have broken bells, clubs or wands around, they lead to further destruction. Have a few spare ones for juggling unless the members will furnish their own clubs.

New apparatus requires at the start more care than old. Bolts are liable to work loose, the shrinkage of wood to loosen parts, others may be adjusted too tight for use. Careful watching is necessary to discover these things and remedy them before they work permanent harm to the apparatus.

Striking Bags.

This piece of apparatus is more fun for the members and more trouble for the director than all the rest. Have two bags, and keep the spare one always ready to put in commission if the other gets knocked out. The cardinal principle of bag care is to keep things snug. Blow up hard—with a pump—lace strong, tie in the neck of the rubber so it will not chafe. It is as easy to mend a rubber as a bicycle tire, and it is done in the same way. If the leather of the bag is broken, it is generally past all help. Buy a good bag, inspect it carefully when you receive it, and if you find a defect in the leather or sewing return it at once. If you can't find a defect, don't ask the maker to make one good that develops by wear—that is your risk. You are just as sharp as another man (if not, don't admit it), and any defect he would be responsible for you should discover. When you find a line of bags that give average good service, stick to the makers like a porous plaster; don't experiment.

Mattresses.

Street shoes and shoes with heels should not be used on mats; neither should a hard indoor shoe be "put" on them. It is more economical to get a shoe that is padded, and throw it on the floor.

When the tufting strings break, they should be promptly renewed, or the felt will get separated into wads. When the centre of the mat is worn out, it may be renewed by sewing on a strip of new canvas.

About the only way to clean mats is to thoroughly beat and dust them, out doors in a breeze, if possible. Mats may be painted to keep dust out. A very elastic "outdoor" paint should be used, or it will soon dry hard, crumble and make dust.

This book aims to be the Gymnastic Director's Pocket Companion to keep in convenient form such information as he is daily in need of.

To this end the Editor will be glad to receive suggestions or information for the next edition.

A. P. E. A.

American Physical Education Association. Organized November 27, 1885. Geo. L. Meylan, M. D., President; J. H. McCurdy, M. D., Springfield, Mass., Secretary.

AFFILIATED SOCIETIES.

The Society of College Gymnasium Directors. Organized 1897. Thomas A. Storey, M. D., President; James A. Babbitt, M. D., Haverford College, Haverford, Pa., Treasurer and Secretary.

The Society of Secondary School Physical Directors. Organized 1902. Pierson S. Page, M. D., President.

Ten annual reports have been published, giving the principal papers read at meetings from 1885 to 1895. In 1896 the American Physical Education Review was established, published quarterly, as the organ of the Associations. Eleven volumes have been published; Vol. I., 1896, 168 pp.; Vol. II., 1897, 264 pp.; Vol. III., 1898, 322 pp.; Vol. IV., 1899, 396 pp.; Vol. V., 1900, 375 pp.; 1901, Vol. VI., 328 pp.; 1902, Vol. VII.; 1903, Vol. VIII.; 1904, Vol. IX.; 1905, Vol. X.; 1906 Vol. XI.; 1907, Vol. XII.

The American Physical Education Review is intended as a medium for the publishing of scientific papers, correspondence and discussions relating to physical training and correlated subjects, also translations, abstracts, news notes from foreign and scientific journals, bringing together matters contributing to all aspects of physical education and the physiology of exercise. The Review is sent free to members of the A. P. E. A. Subscription price, \$3.00 per year.

Proposals for membership and subscriptions for the Review should be addressed to J. H. McCurdy, M. D., 93 Westford Ave., Springfield, Mass.

FLOOR FINISH.

Finish for Maple Floors.—Heat Linseed Oil as hot as can be handled and apply liberally, rubbing it thoroughly in. Put on a second coat, and after it has stood until no more will sink in, remove the surplus with benzine.

N. A. G. U.

(Turnerbund), which was organized in 1850,

The North American Gymnastic Union, is a federation of societies, whose object is the development of the Mind and Body. Any man of good moral character, over eighteen years of age, a citizen of the United States (or who has declared his intention of becoming one), may become a member of a society.

At present the Union is composed of 238 Societies, 48 of which have been in existence over fifty years. The societies of a vicinity are formed into a district of which there are 24 in the Union. Two hundred and nine Societies are incorporated, and 165 have their own halls, which represent a capital of \$4,950,000. The Union has 38,920 members in good standing, 138 of whom have been made honorary national members, having belonged to the Union for more than fifty years.

5553 men are members of the Active classes.
2243 exercise with the Seniors.

2046 belong to the male choruses.

553 to the Fencer's sections.

667 to the Dramatic Sections.

Beside the above the Union furnishes regular gymnastic instruction in its own school classes to 5,665 Women, 2,411 Juniors, 15,868 Boys, 9,610 Girls, making a grand total enrollment of 44,616 active participants in the societies and schools.

The teaching staff in the gymnastic schools is composed of 166 men, who are assisted by trained leaders. In addition to the schools mentioned above. 20 societies have elementary schools, 15 have Sunday Schools, 18 have drawing schools, 6 have schools for domestic science.

The Union conducts a Normal College, open to men and women, located at Indianapolis, Ind., for educating teachers of physical training. The course lasts two, three and four years, and leads to degrees. Mr. Carl J. Kroh is president. (See Normal Schools.)

The next national festival of the Union will be celebrated at Cincinnati, Ohio, in 1908.

The executive of the Union, at present situated in Indianapolis, Indiana, is elected every two years by the National Convention. The National Secretary is Peter Scherer, Address Box 248, Indianapolis, Indiana.

Y. M. C. A.

The Young Men's Christian Association first took up gymnastic work in 1869. The first Gymnasium was opened at the San Francisco, Cal. Association, Nov. 16th. The second at New York City with William Wood as Director, and the third at Boston, with R. J. Roberts as Director. In 1906, 719 associations report attention to Physical Training; through 560 gymnasiums and 401 Physical Directors; 719 associations report 184,963 using physical means.

Schools for Training Directors were established in Springfield, Mass., in 1885, and Chicago, Ill., in 1890. On Oct. 3, 1895, an Athletic League was organized. In 1897 the Athletic League hand-book, giving gymnastic and athletic rules, rules for games, etc., was published.

The emblem of Association gymnasts and athletes is an even-sided triangle, which stands for the all-round, fully developed man.

In 1891 the game of basketball was invented at the Springfield Training School by James Naismith, then a teacher at the school. It was the result of a deliberate effort to devise an interesting athletic game, with a minimum of objectionable features, and has been a great success. It was officially recognized by the A. A. U. January, 1897.

Association gymnastics now have an organized and progressive course, with an approved nomenclature, and simple methods of taking, recording and comparing anthropometric measurements. The Association gymnasiums are among the best in the country, in both design and equipment. The invention of the in-door gallery running track and padded path in 1883 by R. J. Roberts of the Boston Association, and the later development of the concave incline, made running a practical indoor exercise.



(Continued from page 9.)

440 yds. (17 turns)—5m 31 2-5s. C. M. Daniels.
880 yds. (35 turns)—11m 44 4-5s. C. M. Daniels.
1 mile (87 turns)—23m 40 3-5s. C. M. Daniels.
Under Water Swim—106 yds. 2 ft. (4 turns)
E. P. Swatek.

N. W. C. T. U.

Physical Education Department.

This department was created in 1890. Its object is to secure laws in the United States which shall not only establish this a department of education, but make it mandatory in all schools under public control. From the beginning all plans have been determined and operated from the standpoint of pedagogy.

Superintendent, Mrs. Frances Wait Leiter, Mansfield, Ohio, Associates, Mrs. R. Anna Morris Clark, Deadwood, South Dakota; Miss Mary A. Blood, Columbia College of Expression, Chicago, Illinois; Mrs. Lydia Newcomb Comings, Atlanta, Georgia; Miss Clara G. Baer, 1531 Washington Ave., New Orleans, La.; Mrs. M. A. B. Smith, Madison, Wisconsin; Miss Parmelia C. Mahan, Savannah, Mo.; Miss Anne Rothwell Stewart, Chestertown, Maryland.

Field Secretary, Mrs. Della Mae Connett Hixson, Cambridge, Ohio.

Demonstrator and Assistant, Miss Rose W. Leiter, A. B., Mansfield, Ohio.

Human Physiology.

Normal bodily temperature 98 degrees.

Average lung capacity, M. 250, F. 150 cu. in.

Average respiration, 20 to 30 cu. in., or 450 cu. in. per minute.

Average weight, M. 140, F. 120.

Consisting of 3-4 water, 1-4 solids.

Blood travels 16 in. per second and makes the entire circuit, returning to the heart in about 20 seconds.

The human body is composed of 16 chemical elements: carbon, hydrogen, nitrogen, oxygen, sulphur, phosphorus, chlorine, fluorine, silicon, sodium, potassium, lithium, calcium, magnesium, iron and manganese.

Two and a half million sweat glands discharge from 2 to 5 pints daily.

Allow 800 cu. ft. of air per individual and renew it at the rate of 5 cu. ft. per minute.

NEW BOOKS—1907.

HUMAN MECHANISM, THE. Its Physiology and Hygiene, and the Sanitation of its surroundings. In one volume, 12mo. Cloth. 564 pages, 1905. Illustrated, partly in color. Price \$2.00. In two volumes.

Vol. I: Elements of Physiology. 12mo. Cloth, 321 pages. Illustrated. Price, \$1.25.

Volume II: Hygiene and Sanitation. 12mo. Cloth, 270 pages, 1905. Illustrated. Price, \$1.25.

By Theodore Hough, Professor of Physiology, University of Virginia, and William Thompson Sedgwick, Professor of Biology in the Massachusetts Institute of Technology.

This book, primarily intended for high and normal schools, and for short courses in colleges, has proved to be especially adapted to use in normal schools of physical training. It contains in concise form knowledge of physiology and hygiene that every physical director should possess. The keynote of the work is "the right conduct of the physical life." The book is highly endorsed by teachers of physiology, biology and physical education. Of it Dr. Meylan of Columbia College says, "The Human Mechanism is without doubt the best text now available on this subject." And Dr. Story of the College of the City of New York writes, "It is a reliable treatise on elementary physiology written by men of unquestioned authority."

In a review of the book, written for the School Review by Dr. Raycroft of the University of Chicago, he says: "This is a text-book of hygiene on new lines. In the discussion of muscular activity and exercise the authors show a grasp of the essentials of physical training and a discriminating sense of relative values that are refreshing in a book of this character. . . . It seems to be altogether the best work upon the subject for use either as a text-book or for private reading." The last six chapters, devoted to Public Hygiene and Sanitation, are of special interest to the layman, and of so great value that a pamphlet reprint of them, for public circulation, would seem to be desirable. The broad mental grasp of the authors is shown by the last chapter on the Health of Nations.

Contents: Part I. Physiology. Part II. The Hygiene of the Human Mechanism and the Sanitation of its Surroundings; Personal Hygiene; Domestic Hygiene and Sanitation; Public Hygiene and Sanitation.

EDUCATION BY PLAYS AND GAMES. 5 x 7 1-2. 234 pages. Illustrated, 1907. Cloth. Published by Ginn & Co., Boston, Mass. Price 90 cents. By George E. Johnson, Superintendent of Playgrounds, Recreation Parks, and Vacation Schools, Pittsburg, Pa.

In his introduction to this book, Dr. G. Stanley Hall says, "We have here at last a curriculum of plays and games, graded by age from infancy to middle teens, and also analyzed so as to show the chief mental and physical activities involved in and developed by each of them. It goes without saying that such a manual should be read by all intelligent teachers and parents, and that to open-minded educational leaders it suggests important modifications of school work, which when made will tend to greater economy of mental effort, and by turning on the great motive power of the play instinct, give increased efficiency to instruction and to learning, and will make headway against fatigue, perhaps the greatest of all obstacles in the child's pathway." The book is divided into two great parts. Part I—The Theory, History, and Place of Play in Education. Part II.—A Suggestive Course of Plays and Games. In this course, Mr. Johnson divides the years from birth to the age of fifteen into five periods, and gives us the games and activities appropriate for each period. The work is fully illustrated with charming photographs alive with human interest. To playground directors in particular and to all gymnastic directors who have the care of children, it will prove a mine of information.

MEDICAL GYMNASTICS, MANUAL OF. 308 pages. 1907. Illustrated. Price \$3.00. By Baron Nils Posse.

Edited by Baroness Rose Posse, Posse Gymnasium, Boston, Mass.

A re-issue of the original book in enlarged form with the addition of a section on "Medico-Gymnastic Therapeutics" thus increasing its value.

NOMENCLATURE, A GYMNASTIC. 36 pages. 1907. Illustrated. Price 35 cents. By E. H. Arnold, M. D. Director, New Haven Normal School of Gymnastics.

"A practical terminology for daily use on the floor of my gymnasium." Free gymnastics only are dealt with.

RHYTHMICAL BALANCE EXERCISES—HANDBOOK OF. 116 pages, 1907. Published by Boston Normal School of Gymnastics. Price \$1.50.

By Ethel Perrin and May Seely Starks.

This book is based on work done at the Boston Normal School of Gymnastics. The contents comprises the following steps: balance, gallop, polka, two, skip, change, rocking, swing, vut, mazurka and a section of unclassified steps.

BOOM & STALL BAR, LESSONS ON. 1906. Price 60 cents.

By Hartvig Nissen.

Twenty Gymnastic lessons on the Boom and fifteen lessons on the Stall Bars. These lessons are printed on cards convenient for ready reference. Each lesson is of twenty minutes' duration, concluding with a breathing exercise.

GROWTH AND EDUCATION. A Book on the Mental and Physical Growth of Children. 294 pages. 1907. Houghton, Mifflin & Co., Boston. Price \$1.50.

By John M. Tyler, Amherst College, Mass.

The key note of this book is "growth"; and to the physical director its special value is the emphasis the author places on play, athletics, physical training and gymnastics. All who know Prof. Tyler will get the book and conversely all who get the book will know the genial professor.

LIFE, THE EFFICIENT. 1907. Published by Doubleday, Page & Co. Price \$1.20. By Luther H. Gulick, Director of Gymnastics. Public Schools, New York City.

This book is written from the hygienic and physical training standpoint, with some conclusions from modern psychology and physiology. It is not devoted wholly to the subject of gymnastics, but is in line with the present idea that the duty of an educated physical director is to help people to live better—more efficiently.

EVERY DAY LIVING. 1907. Published by F. A. Stokes Co. Price \$1.35.

By Annie Payson Call, author of "Power Through Repose," etc.

Miss Call says, "The muscular training of men is a primal physical need." She says, however, that women's colleges "cannot blindly follow the lead of colleges for men. The greatest physical need for women" is "a training to rest." Not Inactivity "but a restful activity of mind and body." This is a book that should be read by everyone concerned with the physical care of women and girls.

PHYSICAL CULTURE SPORTS AND PASTIMES. A compendium of the rules for Games and Sports, and Articles on Gymnastics. 6 x 9. 416 pages. Illustrated. 1907. Cloth.

Published by the 20th Century Self Culture Association, New York and Chicago.

Edited by Charles Welsh, F. S. A.

This book forms Vol. 6 of the Self Culture for Young People Series. From the introduction by Walter Camp to the list of books on the last page, it is packed with information. Descriptions of games and their rules are by the leading authorities; Basket Ball by Jas. Naismith for instance. There are seventy separate articles by experts and leaders in their respective lines; as a reference book it has no equal.

Contents: Sports and Pastimes. Home Amusements. Physical Training.

LATERAL CURVATURE OF THE SPINE AND ROUND SHOULDERS. 185 pages. Illustrated. Published by P. Blakistons Son & Co. Price \$1.75.

By Robert W. Lovett, M. D.

This book is of special value to physical directors and physicians interested in corrective work. The author ranks with the world's best authorities on the subject.

GYMNASTIC ARTICLES

In 1907 Magazines

- Business Man's Health—A Middle-Aged. Woods Hutchinson, M. D. Saturday Evening Post. March 2, 1907.
- Eyesight for Good Health. Good. Dr. Luther Gulick. World's Work, March, 1907.
- Health. Perfect Working. Dr. Luther Gulick. World's Work. Nov., 1906.
- Physical Training in Japan. C. W. Hurd. World To-Day. Dec., 1906.
- Physical Training a Department of Education. Carl J. Kroh. Elementary School Teacher. Jan., 1907.
- Physical Training a Question of Judicious Support. Carl J. Kroh. Elementary School Teacher. March, 1907.
- Physical Training in Stockholm and Copenhagen. Scharlieb & Ravenhill. Nineteenth Century. Dec., 1906.
- Play and Dancing for Adolescents. G. Stanley Hall. Independent. Feb. 14, 1907.
- Physical Training for City Children. M. Wheeler. Harper's Bazaar. Nov., 1907.
- Play. A complete report of the First Annual Convention of the Playground Association of America, held at Chicago, June, 1907, with reports of addresses and illustrations. Charities. Aug. 3, 1907. Copies may be had for 10 cent. Charities, 105 East 22d St., New York.
- Play and Democracy. Dr. Luther Gulick. Charities. Aug. 3, 1907.
- Play as the School of the Citizen. Joseph Lee. Charities. Aug. 3, 1907.
- Public Schools. A Lesson for the. Adele M. Shaw. World's Work. March, 1906.
- Standing and Walking Erect. Dr. Luther Gulick. World's Work. Feb., 1907.
- Team Games and Civic Loyalty. Dr. Luther Gulick. School Review. Nov., 1906.
- Walking—The Art of. Bliss Carman. Declineator, April, 1907.
- Walking—The Forgotten Art of. Dr. Geo. L. Meylan. Suburban Life. April, 1907.

GYMNASTIC PUBLICATIONS.

AMERICAN PHYSICAL EDUCATION REVIEW. Quarterly. About 70 pages. 6x9. Generally illustrated. Current Volume 12 (1908). Per year \$3.00. Dr. J. H. McCurdy, 4 Massachusetts Ave., Springfield, Mass., Managing Editor, Dr. G. L. Meylan, Secretary, Columbia University, New York, N. Y.

AMERICAN GYMNASIA and Athletic Record. Monthly, 7 1-2 x 10 1-2. Illustrated. Current Volume 4 (1908). Professional Journal for Instructors, and others interested in Physical Development. Per year \$1.50. Single numbers \$.15. American Gymnasia Company, 221 Columbus Ave., Boston, Mass.

MIND AND BODY MONTHLY, 40 Pages. 6x9. Current Volume 15, (1908). Devoted to Physical Education in General and German Gymnastics in Particular. Per year \$1.00. Freidenker Pub. Co., Milwaukee, Wis.

PHYSICAL TRAINING. Monthly. 24 Pages, 6 1-2x9 1-2. Current Volume 5, (1908). Official organ of the Physical Director Society of the Young Men's Christian Associations of North America. Per year \$1.00. Physical Training, 3 West 29th St., New York, N. Y.

POSSE GYMNASIUM JOURNAL. Monthly. 12 Pages. 9 1-4x11. Current Volume 16, (1908). Gymnastics in General, Specially Swedish Gymnastics. Per year \$1.00. Posse Gymnasium Club, 206 Massachusetts Ave., Boston, Mass.

THE ASSOCIATION SEMINAR, Monthly. Discusses Problems of Manhood and the Association, Including that of Physical Training. 40 Pages. 6x8 1-2. Current Vol. 16, (1908). Per Year \$1.00. Seminar Publishing Co., Springfield, Mass.

PLAYGROUND. Monthly, 6x9. Illustrated. Current Volume 1, (1907). Official publication of the Playground Association of America. Per Year \$1.00. The Playground, 8 Astor Place, New York City.

Subscriptions for any of the above should be sent to the addresses given.

PHYSICAL TRAINING BOOKS.

The following list includes books recently published and others that are in general demand. It is not a complete list of all books published. Information concerning other publications will be given on request. Books not mentioned here can usually be supplied at short notice by American Gymnasia Co., which company now handles the book department formerly conducted by the Narragansett Machine Co.

Books sent by mail or express to any address. Books sent by express C. O. D. when requested.

Orders should be accompanied by amount indicated. Add 5 cents for postage on books listed at more than 50 cents; 2 cents for others, if to be sent prepaid.

Anthropometry, Etc.

Anthropometry, Dr. J. W. Seaver	1.50
Anthropometric Handbook, Dr. Sargent. .	.75
Anthropometric Manual, Amherst College .	.25
Developing Appliances, Dr. D. A. Sargent	1.00
Physical Measurements, Hastings, Boys..	1.50
Same, Boys and Girls	2.00
Report on Revision of Phy. Ex., A.P.E.A. .	.15
Universal Test, Dr. D. A. Sargent.....	.50

Athletics.

Athletics (English), H. H. Griffin.....	.50
Athletics, Track and Field, Graham-Clark	1.00
Athletics, Track (Scribner)	1.50
Athletics and Sports for Women, Hill..	1.50
Athletics, in Detail, Track and Field ..	1.50
Practical Training, Dr. R. Faries	1.00
Football for Player and Spectator, Yost	1.50

Calisthenics.

Free Gymnastic Drills, Betts	.55
Physical Exercises, Chesterton	1.50
Practical Drills, Freehand, Indian club, dumbbells and wands, Middleton	.40
Freehand Calisthenic Drill, Paffendorf .	.05
Calisthenic Series No. 1, (drills)	.05
Dumb-bells, Graf	.60
Chest Weight Exercises	.10
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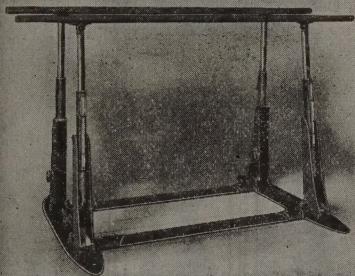
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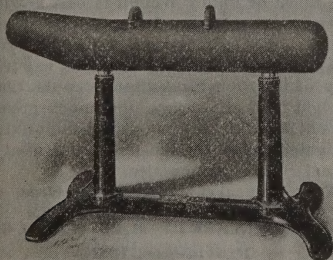
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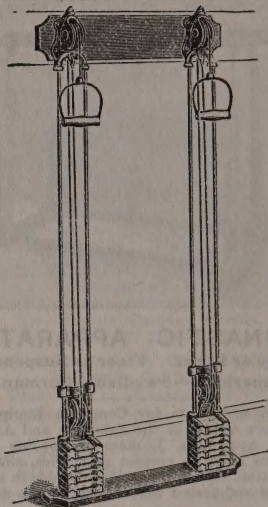
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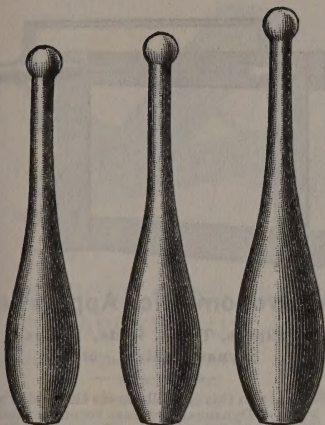


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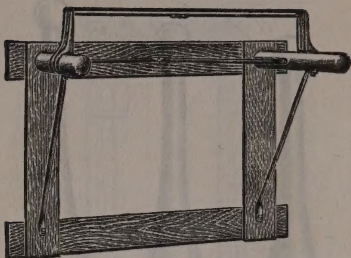
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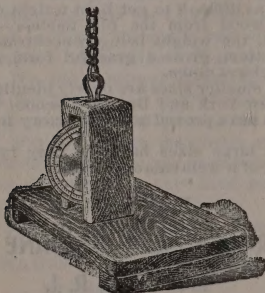
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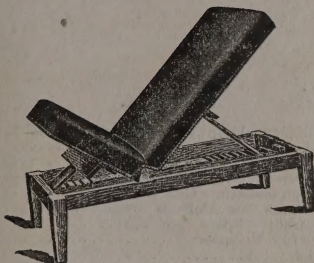
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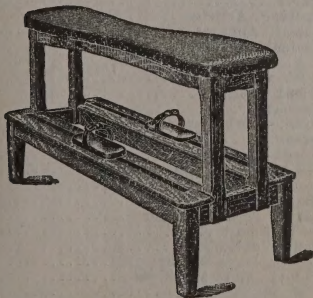
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